

Remarks/Arguments

Claims 19, 21-32, 34-36 and 42 are being examiner on the merits. Claims 1-18 and 21 were previously canceled without prejudice. Claims 33 and 37-41 have been withdrawn by the Examiner. With this paper, Applicants cancel without prejudice Claim 20 and amend Claims 19, 31, 27 and 42. Amendments do not introduce new matter and are provided to further define Applicants' claimed invention.

On page 2-3 of the Office Action mailed May 7, 2008, the Examiner provisionally rejected Claims 19-21-32, 34-36 and 42 under the nonstatutory obviousness-type double patenting rejection as claiming a non patentably distinct invention from that of co-pending U.S. Patent Application No. 11/648,384. Said claims are also rejected under 35. U.S.C. 101. Applicants respectfully request the rejections be held in abeyance until there is allowable subject matter. Applicants also note that where there are two co-pending applications, neither of which has issued and both said to claim similar subject matter, the first application should be allowed to proceed to issuance.

On page 5 of the Office Action, the Examiner rejected Claims 19-21-32, 34-36 and 42 under 35. U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,602,292 (hereinafter "Burkinshaw"). Applicants respectfully disagree that Burkinshaw teaches a disc body that is an intervertebral prosthetic disc and suitable for placement between adjacent vertebra. Applicants first point out that Burkinshaw specifically describes only a patellar prostheses and there is no suggestion or teaching in Burkinshaw that a patellar prosthesis is used anywhere except at the patellar joint nor that a patellar prosthesis as described could function as an intervertebral disc. One skilled in the relevant art knows that the biomechanics defining patellar function and movement are quite different than the biomechanics defining an intervertebral disc and articulation of a patella is biomechanically different than that of an intervertebral disc. Moreover, there are distinct differences between Burkinshaw's prosthetic patella and the Applicant's intervertebral disc, such as the surface geometry that includes the surface orientation. Burkinshaw provides an initial teaching of the biomechanics of a patellar joint at Col. 1, ll. 14-39, including the fact that such a joint requires two mutually engaging articulating surfaces (e.g., two convex facets on the patella's posterior face that articulate against a patellar surface of the

femur or its medial and lateral condyles). Burkinshaw then teaches the orientation of its patellar prosthesis and articulating surfaces at, for example, Col 3, ll. 12-43 and Col 4, ll. 1-16. Applicants also wish to note that flexion of the spine and flexion of the knee generally occur about an axis normal to a sagittal plane. However, with respect to such flexion and surface orientation, Burkinshaw makes it very clear that the orientation of said surfaces of its patellar prosthesis are distinctly different from those of Applicants' claimed invention. For example, Burkinshaw's prosthetic surfaces are not oriented such that a convex reference curve is formed when its articulating surface is intersected with a sagittal plane (or midsagittal plane). In addition, Burkinshaw's prosthetic surfaces are not oriented such that a concave reference curve is formed when its articulating surface is intersected with a second plane orthogonal to the sagittal plane. Thus, with respect to flexion, Burkinshaw's articulating surface is oriented at a 90 degrees difference as compared with the articulating surface of Applicants' intervertebral disc. This is supported by Applicants' own teaching that its shaped articulating surface and orientation places an instantaneous-axis-of-rotation (IAR) in a different yet desired location (e.g., paragraphs [0016] of Applicants' as-filed application). As such, Burkinshaw does not teach or suggest each and every element of Applicants' claimed invention, including a body having a single articulating surface with a substantially hyperbolic paraboloid shape or a single shape characterized as a hyperbolic paraboloid shape or wherein a convex reference curve is formed when the single articulating surface is intersected with a midsagittal plane or wherein a concave reference curve is formed when the single articulating surface is intersected with a second plane orthogonal to the midsagittal plane. For the above-stated reasons, Burkinshaw does not anticipate the claims.

On page 5 of the Office Action, the Examiner rejected Claims 19-21-32, 34-36 and 42 under 35. U.S.C. 102(b) as being anticipated by U.S. Patent No. 3,872,519 (hereinafter "Giannestras"). Applicants respectfully disagree that Giannestras teaches a disc body that is an prosthetic intervertebral disc and suitable for placement between adjacent vertebra. Applicants point out that Giannestras specifically describes an ankle prostheses and there is no specific teaching or suggestion in Giannestras that an ankle prosthesis is suitable for use anywhere except at the ankle nor that an ankle prosthesis could function as an intervertebral disc. One skilled in the relevant art knows that the biomechanics associated with the ankle is very different than the

biomechanics associated with an intervertebral disc and that articulation of the ankle is very different than that of an intervertebral disc. Giannestras describes the necessities for articulation at an ankle that includes requiring a tibial member and a talar member (Col. 2, ll. 3-17). There are two articulating surfaces, each of which is said to be “conical in shape” (Col. 4, ll. 28-30; FIG. 3). Moreover, the articulating surface of the talar member does not have a single shape but is a “single groove, double-ridged surface” and the articulating surface of the tibial member does not have a single shape, but is a “single-ridge, double-grooved surface” (Col. 4, ll. 19-22). Therefore, each articulating surface described as a “bearing surface” by Giannestras, which includes the articulating surface on the talar member and the articulating surface on the tibial member, is, in fact, a surface having multiple surface regions that are non-uniform and of varying characteristic shapes that vastly differs from that claimed by Applicants’. As such, Giannestras does not teach or suggest a body having a single articulating surface or a single shape characterized as a hyperbolic paraboloid shape. For the above-stated reasons, Giannestras does not anticipate the claims.

On page 6 of the Office Action, the Examiner rejected Claims 19-21-32, 34-36 and 42 under 35. U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,039,763 (hereinafter “Shelekov”). Applicants respectfully point out that Shelekov does not teach a single articulating surface with a hyperbolic paraboloid shape or a single shape characterized as a hyperbolic paraboloid shape. For example, Shelekov, as described in previous Amendments, explicitly describes a two component device requiring a first plate 1 and a second plate 10 and does not teach or suggest a single articulating surface having a single characteristic shape but rather surfaces that each have multiple articulating portions with more than one characteristic shape. Shelekov explicitly describes two convex surfaces on first plate 1 that are provided as “bimodal convex-shaped” surfaces and also explicitly describes two laterally juxtaposed concave surfaces on second plate 10 that are defined by Shelekov as “bimodal concave-shaped” surfaces (Col., l. 25; Col. 3, ll. 19-20; Col. 5, ll. 55-56; Col. 6, ll. 33-44; Claims 8, 9, 13, 18, 19, 20). Shelokov further and explicitly states that “concave-shape modes of the articulating second superior surface” (plate 10) will be separated by a “raised surface interposed the first and second modes,” further exemplifying that Shelekov’s articulating surfaces are each made of a surface that has multiple surface portions with different characteristic shapes (Col 4, ll 25-27). Thus, as taught

explicitly by Shelekov, the articulating surfaces of Shelekov's artificial disc articulates not as a spine would but rather "articulates in a manner resembling a human knee" (Col. 3, ll. 15-16) because the articulating surfaces are, in fact, are not of a single mode but "bimodal" and undulating surfaces with two surface portions that are described as either convex or concave, and may actually be defined as parabolic, hyperbolic or follows a radius. Shelekov further explicitly teaches that its convex surface portions will articulate with concave surface portions. Shelekov does not teach or suggest an articulating surface that, in its entirety, is a substantially hyperbolic paraboloid shape. As such, Shelekov, like Burkinshaw and Giannestras, does not teach each and every element of Applicants' claimed invention and cannot anticipate the claims.

Applicants respectfully request the rejections relying on Burkinshaw, Giannestras and Shelekov each submitted under 35 U.S.C 102(b) be removed and the application be allowed to proceed to allowance.

Conclusion

In light of the amendments and remarks presented with this paper, Applicants respectfully submit amendments to the claims as provided in the Listing of Claims beginning on page 2 of this paper. Applicants further submit such claims introduce no new matter and are believed to place the Application in condition for allowance.

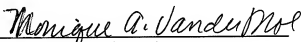
A Petition for Extension of Time and the appropriate fees are provided with this response. Should any additional fees be due, Applicants herewith authorize the Commissioner to charge any additional fees, other than the issue fee, that may be required by this paper to Deposit Account 07-0153. Any overpayments should be deposited to the same deposit account.

Should the Examiner have any questions or comments, or if further clarification is required, it is requested that the Examiner contact the undersigned at the telephone number listed below.

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Respectfully submitted,

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